Patent Claims:

1. Aggregated, crystalline silicon powder, characterised in that it has a BET surface of more than 50 m^2/g.

2. Aggregated, crystalline silicon powder according to claim 1, characterised in that the BET surface lies between 100 and 700 m^2/g.

3. Aggregated, crystalline silicon powder according to claim 1 or 2, characterised in that it has a hydrogen loading of up to 10 mole %.

4. Aggregated, crystalline silicon powder according to claims 1 to 3, characterised in that it is doped with phosphorus, arsenic, antimony, bismuth, boron, aluminium, gallium, indium, thallium, europium, erbium, cerium, praseodymium, neodymium, samarium, gadolinium, terbium, dysprosium, holmium, thulium, lutetium, lithium, germanium, iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, gold or zinc.

5. Aggregated, crystalline silicon powder according to claim 4, characterised in that the proportion of the doping components phosphorus, arsenic, antimony, bismuth, boron, aluminium, gallium, indium, thallium, europium, erbium, cerium, praseodymium, neodymium, samarium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium and lutetium is up to 1 wt.%.

6. Aggregated, crystalline silicon powder according to claim 4, characterised in that the proportion of the doping component lithium is up to 53 wt.%.

7. Aggregated, crystalline silicon powder according to claim 4, characterised in that the proportion of the doping component germanium is up to 40 wt.%.

8. Aggregated, crystalline silicon powder according to claim 4, characterised in that the proportion of the doping components iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, gold and zinc is up to 5 wt.%.

9. Process for the production of the silicon powder according to claims 1 to 8, characterised in that

- at least one vaporous or gaseous silane and optionally at least one vaporous or gaseous doping substance,
- and an inert gas
- are continuously transferred to a reactor and mixed therein,
  - wherein the proportion of the silane is between 0.1 and 90 wt.% referred to the sum total of silane, doping substance and inert gases,
- and a plasma is produced by input of energy by means of electromagnetic radiation in the microwave range at a pressure of 10 to 1100 mbar,
- the reaction mixture is allowed to cool and the reaction product is separated in the form of a powder from gaseous substances.

10. Process according to claim 9, characterised in that the proportion of silane, optionally with the

inclusion of the doping component, in the gas stream is between 1 and 10 wt.%.

11. Process according to claim 9 or 10, characterised in that the silane is selected from the group of compounds SiH_4, Si_2H_6, $ClSiH_3$, Cl_2SiH_2, Cl_3SiH and/or $SiCl_4$.

12. Process according to claims 9 to 11, characterised in that the silane is selected from the group of compounds $N(SiH_3)_3$, $HN(SiH_3)_2$, $H_2N(SiH_3)$, $(H_3Si)_2NN(SiH_3)_2$, $(H_3Si)NHNH(SiH_3)$, $H_2NN(SiH_3)_2$.

13. Process according to claims 9 to 12, characterised in that the doping substance is selected from the group of hydrogen-containing compounds of phosphorus, arsenic, antimony, bismuth, boron, aluminium, gallium, indium, thallium, europium, erbium, cerium, praseodymium, neodymium, samarium, gadolinium, terbium, dysprosium, holmium, thulium, ytterbium, lutetium, lithium, germanium, iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, gold or zinc.

14. Process according to claims 9 to 12, characterised in that the doping substance is lithium metal or lithium amide ($LiNH_2$).

15. Process according to claims 9 to 14, characterised in that nitrogen, helium, neon or argon are used as inert gases.

16. Process according to claims 9 to 15, characterised in that hydrogen is additionally introduced into the reactor.

17. Process according to claim 16, characterised in that the proportion of hydrogen lies in a range from 1 to 96 vol. %.

18. Process according to claims 9 to 17, characterised in that the reaction mixture is thermally post-treated.

19. Process according to claim 18, characterised in that the thermal post-treatment is carried out in the presence of at least one doping substance, in which the doping substance is introduced together with an inert gas and/or hydrogen.

20. Process according to claim 18 or 19, characterised in that the thermal post-treatment of the reaction mixture is carried out by means of a wall-heated hot-wall reactor.

21. Process according to claims 9 to 20, characterised in that the reaction product after cooling is again thermally post-treated.

22. Process according to claim 21, characterised in that the thermal post-treatment is carried out in the presence of at least one doping substance.

23. Use of the silicon powder according to claims 1 to 8 for the production of electronic components, electronic circuits and electrically active fillers.